DOCUMENT RESUME

ED 369 027 CG 025 375

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TITLE Causes of College Retention: A Systems Perspective.
PUB DATE 23 Aug 93
NOTE 12p.; Paper presented at the Convention of the American Psychological Association (101st, Toronto, Ontario, Canada, August 20-24, 1993).
PUB TYPE Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Persistence; *College Outcomes Assessment; *College Students; Dropout Attitudes; *Dropout Prevention; Dropout Research; Higher Education; Institutional Research; Research Methodology; *School Holding Power; *Student Attrition; Student College Relationship
IDENTIFIERS Georgia Institute of Technology

ABSTRACT

The development of students should be the primary mission of higher education. The consequences of significant attrition in many universities are not trivial. This study identified relevant variables and appropriate methodologies for enhancing undergraduate retention at one university. By employing records analyses, system definition, and a longitudinal investigation, researchers examined the interaction of student characteristics with the institution. This archival approach tracked the matriculation of 1,722 fall 1987 enrollees over a 5-year period. Gender, ethnicity, high school GPA, and SAT scores influenced degree outcomes. Currently enrolled students and "non-persisters" provided qualitative data for three areas: (1) reasons for withdrawal from the institution; (2) negative critical incidents; and (3) areas of dissatisfaction. This information was categorized into major student-perceived problems and a flow chart of the students' academic progression was developed. Survey data concerning attitudes and behaviors related to adjustment were solicited at entry, mid-quarter, and before finals; comparisons were also made between first-quarter and upper level students. The multiple approach adopted here yielded information that might have been overlooked if the study had relied on a single data source or method. Results indicate that institutions must be aware of two key points: (1) the unique needs and challenges its students face; and (2) the time and location of weak links or gaps in the existing support systems. (RJM)

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ED 369 027

Causes of College Retention: A Systems Perspective

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ABSTRACT

The development of students should be the primary mission of higher education. The consequences of significant attrition in many universities are not trivial. Hence, retention research and related support programs continue to receive emphasis. The literature pleas for institution-specific programs of research, using multiple approaches to identify the major causes of non-persistence. The present study series employed *records analyses*, *systems definition*, and a *longitudinal investigation* to examine the role of individual characteristics and their interaction with the institution in the student departure process. The archival approach focused on 1722 enrollees (Fall 1987) with respect to the outcome variable of degree attainment within five years. Gender, ethnic group membership, high school GPA, and SAT scores were all related to this outcome. Currently enrolled students and "non-persisters" provided qualitative data regarding reasons for withdrawal from the institution, negative critical incidents, and areas of dissatisfaction, which were categorized into major student-perceived problems. A flowchart of the students' academic progression through the system was developed. The identified potential problem areas (e.g., teaching quality & support from faculty; administrative units on campus) and on-campus support programs relevant to these problems, were located on the chart. Survey data concerning attitudes and behaviors related to adjustment were solicited at entry, mid-quarter, and before finals, and comparisons were made between first-quarter and upper level students. Newcomers were found to have special needs for social support. Support received from others positively impacted anxiety and satisfaction during the adjustment process. Each approach to the retention problem provided unique information that might have been overlooked if the studies had relied on a single data source or method. The resulting conclusions are available for a range of potential users who can plan interventions that target limited resources on the most problematic areas of attrition.

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CG025375

I. Introduction

The Importance of Studying Retention. Retention research is important for individual students and families, the college or university and society at large. Not achieving the baccalaureate degree represents significant loss for all parties involved. For decades, attrition rates have been alarmingly high, especially on the larger campuses (Astin, 1975). The consequences of this massive exodus for higher education are not trivial.

The development of students, and not retention per se, should be the long term mission of the educational institution (Crockett, 1992). The objective of intellectual and social growth of students provides ample rationale for planned support programs and ongoing institutional studies of an evaluative nature. The literature, created by several research specialties, offers numerous principles for policy and practice relating to student retention.

The Need for Institution-Specific Programs of Research. Because of differences in demographics and organizational climate, it is critical that every institution of higher education identify the factors that weigh most heavily in the retention of its students. A number of relevant variables have been noted by researchers studying undergraduate retention at other universities, but direct application of results from these studies is not appropriate due to the heterogeneity of student attributes and the unique nature of various academic environments. For example, it cannot be assumed that the variables found to be important to retention at a 2-year community college will generalize to a smaller or larger university or to a 4-year technical institution, such as Georgia Tech with 63% of the undergraduates identified as engineering majors.

Student Departure as a Function of Individual Characteristics and Their Interaction with the Institution. Institutional departure is a function of both individual attributes and characteristics and interactions between the student and the organization. Persistence behavior is primarily a function of the quality of a student's interactions with the academic and social systems of the institution (Tinto, 1987). Students enter a particular college or university with a range of background characteristics and goal commitments which affect their performance and integration into the academic environment.

Much of the past research on retention has neglected the role of the institution in preventing voluntary withdrawal. The literature has focused largely on the influence of individual abilities and dispositions on student departure behavior. However, differences in student behavior can only be understood within the context of the social environment created by other individuals.

The Need for Multiple Approaches. To identify the primary causes of student attrition, the literature argues that it is necessary to look at both the "system" and students as they progress through the academic and social experience. Given that a broad, systems perspective is essential for understanding the role of the institution in reducing the retention problem, a variety of methods or approaches should be applied to achieve a comprehensive systemic investigation. We chose the following three approaches:

1. *Records Analysis*, which can be used to examine the relationship between cognitive measures and demographic variables and persistence behavior in creating a profile of persister versus "at risk" students. Early identification of the latter category is imperative, as is a tracking mechanism which provides timely information to student support professionals and academic units in higer education.

2. *Defining the System* by clarification of institutional objectives and delineation of the steps that students follow as they advance toward their academic degree. This approach is crucial in order to achieve a better understanding of the policies and practices impacting the individual student and to pinpoint problem areas that require attention

3. *Longitudinal investigation of variables* is prerequisite in studying the process of student departure. Data collection over time will best reflect changes individuals experience as they adjust to the campus environment.

II. Method and Examples of Results

The literature-based approaches will be described separately, in the context of substudies with distinctive results and implications. The archival research method was a logical, and fruitful, preliminary emphasis.

A. Records Analysis

The potential relation of individual characteristics with student departure was examined using student records analyses. The archival approach was selected because of the large number of hypotheses that can be investigated with just a few resources. The number of cases and variables that can be studied at one time is limited only by the records kept at the institution. A possible outcome of this type of study is the determination of a profile of individual characteristics that

define the "at risk' student. Information of this nature would help the staff identify and monitor more closely those students who are likely to encounter academic and personal difficulties.

Data and Procedure

Data for the 1722 students who first entered a southeastern technological institution as freshmen in the Fall of 1987 were the basis for this investigation. The sample consisted of 88 black, 1507 white and 127 students from other ethnic backgrounds (Asian, Hispanic, or Indian) and included 377 females. The 1987 matriculants were chosen because 5 years of data on their behaviors and outcomes were available, eliminating the years needed to track new students through the system. Data concerning certain student characteristics and outcomes for the 1722 students was obtained via on campus sources (admissions and registrars offices).

Student characteristics. Information regarding gender, ethnic background, high school grade point average (GPA), total SAT scores, SAT math scores, and SAT verbal scores was originally provided by students on institution application forms. While the majority of students entering the instituion were in the top 10% of their graduating high school class, the sample was categorized by their high school GPA relative to their own entering class. Students were first rank-ordered according to their GPA and then placed in quartiles based on this ranking. Quartiles were also created for SAT scores after rank-ordering students three times, once according to scores on each of the SAT sections (i.e., verbal and math) and once according to total SAT scores.

Outcome. *Degree attainment* was selected as the outcome variable of interest because percent of students who attain a degree is the measure used to compute official retention rates at the institution. It is defined as whether or not the student received a degree within 5 years of entering the school.

Results and Discussion

Contigency tables were formed by crossing each student characteristic with degree attainment. Chi-square tests of independence were then conducted to test for relationships between each characteristic and whether a degree was earned within 5 years.* All of the student characteristics were found to be related to degree attainment except SAT verbal scores. Females were more likely to attain a degree than were males ($\chi^2(1, N=1722) = 27.06, p<.0001$). Two thirds of the

* William Collins and Stanley A. Mulaik, Ph.D., with the assistance of Christopher Steilberg gave primary emphasis to the records analysis substudy

females received a degree within five years compared to only a little over one-half of the males. Ethnic group membership also predicted degree attainment ($\chi^2(2,\underline{N}=1722) = 13.45, p<.001$). Specifically, 66% of students in the "other " category graduated within five years, while 56% of white students and 41% of black students attained the degree. High school GPA relative to all entering students was found to be strongly related to this outcome ($\chi^2(3,\underline{N}=1722) = 70.59, p<.0001$). Only 45% of students in the lowest quartile received a degree compared to 72% of those in the top quartile. The observed relation between SAT scores and degree attainment was such that as scores increased, percent of students earning the degree also increased. This relationship was found to be significant for SAT math ($\chi^2(3,\underline{N}=1722) = 10.60, p<.01$ and SAT total ($\chi^2(3,\underline{N}=1722) = 15.44, p<.001$), but not for SAT verbal ($\chi^2(3,\underline{N}=1722) = 4.87, p<.19$).

These results suggest that efforts specifically aimed at improving retention among males and blacks are warranted. The content of such programs would have to based on further examination of the causes for lower degree attainment among members of these groups. Likewise, individuals having lower high school GPAs and SAT scores than other students entering the institution along with them might be "flagged" and their progression tracked, so that timely assistance could be offered as needed. Although these analyses yielded valuable information regarding groups of students that might benefit from retention oriented efforts, other approaches are needed to clarify when and where in the system the pressures are greatest for all students and to identify weak links in the institution's support system.

B. Defining the System

The rationale for employing this approach was to better understand causes of attrition by analyzing the institution's undergraduate program as a system. An attempt was made to better define the system by (1) elaborating the steps a student takes as she/he progresses through the system, (2) identifying and locating problem areas in the system, and (3) establishing the location of support programs and services in the system and determining whether they are aimed at the identified problem areas.

Sample and Procedure

Both currently enrolled and past students participated in this study. The sample of *"current"* students consisted of a representative cross-section of 87 upper-level undergraduates attending a Psychology class. Critical incident data were collected from these students by asking them to respond to statements like *"Describe in detail a negative experience you had during your first year at the*

institution. Be sure to include information about any person or group involved, the events leading up to the incident, and the outcome of the incident." The 25 participants in the *"non-persister"* sample entered the institution as freshman in the Fall of 1992, but did not return after their first quarter. These individuals were contacted and interviewed by telephone. They were asked why they decided to leave the institution and which aspect of their experience while in attendance created the most dissatisfaction for them.[b]

Prior to analyzing the responses provided by the two samples, a flow chart was developed to portray the students' academic progression through the system. Steps included in the chart begin with the students decision to go to college and culminate with attainment of a degree or the decision to withdraw from the institution. The intent was to use the responses from the "current" and "non-persister" groups to pinpoint areas of major dissatisfaction perceived by students and to specify their location on the flowchart. A list of on-campus student support programs and services was also compiled, and an attempt was made to situate these services in their appropriate place on the chart of the system.

Results and Discussion

The information collected from the two samples was initially analyzed separately. Two graduate student judges sorted the responses collected from the "current" group into categories of problems perceived by students. After differences in the categorizations were resolved, the problem categories were rank-ordered according to the number of responses that was placed in it (the problem area most frequently mentioned being given the rank of number one). This procedure was repeated for the responses provided by the "non persister" group. The resulting categories, frequencies of responses, and ranks for each sample are presented in Table 1.

The results of the categorization and ranking process for the two groups were compared, and a correspondence was found for two of the categories. The problem area most frequently mentioned by individuals in the non-persister group was quality of teaching. An example of a response included in this category is *"professors hired for research, not for teaching."* Similarly, the sample of current students most often reported incidents involving lack of support by professors, TAs, and administration. Given that this category received top ranking in both samples, high priority might be given to a closer examination of this perceived problem with faculty teaching skills and faculty-student relationships. Problems or dissatisfaction with administrative facilities/units on campus were also frequently

[b] Thanks to William Collins and Jerry Palmer who conducted the telephone interviews with the individuals not returning after their first quarter enrollment

Table 1. Categories of problems derived from responses of current students and non-persisters

Reasons for Leaving and Areas of Dissatisfaction Reported by "Non-Persisters"

Rank	Category	Frequency
1	Quality of Teaching	13
2	Administrative Facilities/Units	11
3	Narrow Curriculum	9
4	Money Problems	5
5	Lack of Communication Within System	4
6	Academic Problems	4

Negative Critical Incidents Reported by "Current" Undergraduates

Rank	Category	Frequency
1	Lack of Support by Professors, TAs, and Administration	29
2	Academics - too little studying (too much socializing)	20
3	Lack of Satisfactory Social Interaction with Peers	17
4	Dissatisfaction with Administrative Facilities/Units	17
5	Racial Tension	7
6	Academics - difficulty	5

reported by participants in both groups (this category was ranked second and third based on "non-persister' and "current student" responses respectively), and overlap was noted concerning the specific units referred to in participant responses.

Qualitative data such as these can be used to identify potential problem points in the system. The information that was gathered regarding on-campus support services can then be reviewed to determine which of the programs has objectives that are related to the critical problem areas. Relevant programs should be evaluated in the continuous improvement spirit, emphasizing positive feedback with encouragement for improvement. New intervention to address the identified "weak links" in the flow chart can also be designed as needed.

C. Longitudinal Investigation of Variables

Previous research indicates that only about one third of the students who drop out of college leave for academic reasons (Tinto, 1987). Clearly, other potential causes of attrition must be addressed. One strategy for the determination of the root causes of student departure is to focus on the experience of college freshmen and how they become socialized to student life. Because the learning and adjustment involved in socialization represents a process, the measurement of changes in the individual student requires that data be collected over a period of time. Therefore, a longitudinal design was chosen to capture changes in variables (behaviors, attitudes, and perceptions) related to student socialization and adjustment (Bollar, 1993).

Data and Procedure

An eight-page questionnaire was developed to assess student perceptions, attitudes, and behavioral intentions regarding adjustment to college life. Variables measured include: (1) *realistic academic and social expectations*, (2) *anxiety*, (3) *academic and social satisfaction*, (4) *coping strategies*, and (5) *perceived social support from peers, older students, family, and faculty members*.

In 1992, surveys were administered to both incoming freshmen and upper-level students at three different times during the Fall quarter of the school year. The first survey administration (N = 437) took place prior to and during the first week of classes. The second administration (N = 235) was conducted at midterm and the third distribution (N = 181) of questionnaires were given the week preceding the final exam period. Participants in the study completed the survey at their on-campus residence hall, with the help of resident assistants or in an upper-level course. An attempt was made to sample a wide variety of students, in terms of years in school, gender, living arrangements, etc.

Comparison were made between the responses of first-year students and upperclassmen, which served as the control group. It was anticipated that if the variables measured were related to student adjustment, upper-level students who have had more time to adjust would have scores which significantly differed from those of students who were still "newcomers".

Results and Discussion

One important finding concerned the types and sources of social support that were perceived as useful by students. Differences were found between freshmen and upper-level students for the perceived usefulness of different kinds of support from various sources, indicating that newcomers do have special needs for social support and may require additional opportunities to interact with others.

Differences were also found in the reported frequencies of coping behaviors used by freshmen and more experienced students. Newcomers were more likely to use direct negotiating strategies than upperclassmen, while upperclassmen relied more on appraising and redefining coping strategies. A possible explanation for these results is that new students enter college with the unrealistic idea that they can influence outcomes via discussion with their instructors. However, veteran students may come to realize that they cannot make much of a difference through negotiation techniques. This finding is consistent with other data collection approaches reporting a lack of warmth on the part of faculty as well as a lack of concern for student needs on the campus studied. In addition, students in their first year at Tech perceived faculty members to be more helpful to their adjustment compared to upper-level students. Together, these findings suggest that students may be entering college with possibly unrealistic expectations about how to deal with the demands of their current environment. Inaccurate expectations have been studied as a precursor to premature turnover (Wanous, 1980) and signals a potential intervention strategy for academic institutions.

It was concluded that the support received from others may positively impact the adjustment process by decreasing anxiety and enhancing satisfaction with environmental factors. Satisfaction with the academic and social systems of an educational institution are believed to relate positively to both involvement and commitment with the institution and to intentions to remain with the institution (Van Hein, 1991).

Findings from the previously mentioned approaches can be used in interpreting results from the survey data. For example, the finding of low ratings of faculty supportiveness parallels the dissatisfaction with teaching and academic helpfulness reported in the systems definition approach. This convergence across methods contributes stronger evidence that interventions focused on this problem area are called for.

III. Conclusion

The essential objective of the present research was to identify relevant variables and methodology appropriate for enhancing undergraduate retention at one university, and beyond if generalizations could be considered feasible. No easy answers were found in the literature, although a body of guiding principles did emerge from numerous attempts to explain the concepts of student departure, attrition, "at risk", and persistence to the baccalaureate degree (Astin, 1993). The traditional classes of variables (viz., person attributes and environmental-organizational impact) provided a conceptual frame for the current sub-study designs, sampling considerations and interpretation of the new data obtained at one academic institution. Under a harsh time frame and the usual constraints of field experimentation, a systemic research perspective was realized, with implementation focusing on three concurrent approaches to data collection.

Each rationale (i.e., records, role incumbents, and non-persisters as data sources), and specific methodology, contributed to an understanding of the departure phenomenon for one student population. Each emphasis, and resulting datafile, provided unique information that might have been overlooked if the studies had relied primarily on a single data source or method. At the same time, consistency of findings across approaches indicates critical areas that merit future attention. The resulting conclusions are thus available for a range of potential users who can plan interventions that target limited resources on the most problematic areas of attrition. The key is for an institution to be aware of (1) the unique needs and challenges its students face, and (2) the time and location in the system of "pressure points" (i.e., the weak links or gaps in existing support systems must be documented).

Retention studies emanate from the philosophy of program and organizational evaluation, which has grown in stature --but is often omitted in practice. Difficulties often arise in the conceptualization of and creation of "measurements", especially in gaining consensus on outcome variables. This criterion problem has been discussed in the psychological literature for a half century (Loveland, 1980). High value should be placed on continual evaluation and program modification (i.e., adhere to continuous improvement principles receiving renewed emphasis at present).

Clarion calls for ongoing institutional research on the quality of student life, including valid admissions decisions, are not new (Michael, 1965; Feldman & Newcomb, 1969). With more than a million new enrollees annually, systematic studies relating to the disturbing undergraduate retention issue continue to have merit.

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